Consumer Engagement Project Statement of Work

Prepared For:

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Section 1: Introduction

CNSI is pleased to present this statement of work (SOW) for implementing Consumer Engagement solution which will provide the Michigan Medicaid members secure access to member health information with the goal of engaging and empowering them to manage their health.

The Consumer Engagement project will involve design, development, and implementation of a Member Portal application:

Member Portal: A member-centric online web portal for Michigan Medicaid members ensuring secure access to their health information allowing them to engage and manage their overall health.

The project will also involve integration and deployment of a Member Portal application with other member-centric CNSI products including:

myHealthButton: CNSI's Medicaid mobile product, which allows members to access their critical health information instantly and securely from anywhere through their mobile devices.

Electronic Fusion Repository Management (eFRM): CNSI's Electronic Fusion Repository management product which integrates member's administrative information with clinical information thereby providing critical insights and actionable intelligence regarding their health.

CNSI proposes to complete the Consumer Engagement Project under a fixed-cost agreement.

1.1 Regulatory and Business Drivers for Change

The implementation of the Consumer Engagement project facilitates the Michigan Department of Community Health (MDCH) and Gov. Rick Snyder's goal of a "Healthier Michigan" and related initiatives such as the "Michigan 4X4 Plan". Michigan has one of the highest obesity rates in the nation, which includes 32 percent of adults and 17 percent of youth. Obesity directly impacts a person's overall health and is the root cause of many chronic illnesses, such as type 2 diabetes and heart disease. As a result, the State of Michigan can be impacted by a huge financial burden. The Consumer Engagement project will enable Michigan achieve MDCH's "Michigan 4x4 Plan", by empowering the members to have access to their critical information and by allowing them to actively engage in managing their health through the Consumer Engagement solutions such as the Member Portal and myHealthButton mobile application, proposed to be implemented through this project.

In addition, the project will also enable the State of Michigan to align with the important trend towards "consumerism" in the healthcare space. The consumer-centric approach not only will help improve health outcomes of Michigan Medicaid population, but also has the potential to bring down healthcare costs- by empowering members and encouraging them to follow a healthier lifestyle.

Consumer-driven reforms encourage individuals to actively engage in managing their own health and in the health care market. In both private and public spheres, such reforms are becoming more common throughout the US. This relatively new trend towards "consumerism" is spawned by an overall shift in the way we, as a nation, think about health care. The new "consumer model" engages individuals in health care decision-making by shifting greater financial responsibility to consumers, increasing transparency in price and encouraging competition. It is thought that well-informed consumers who bear greater financial

responsibility for their health care decisions will act as natural regulators of cost and increase overall satisfaction with the system.

CNSI's continued focus and research in 'healthcare consumerism' has resulted with pioneering products and solutions in the consumer engagement space, which will be leveraged for this project for maximizing the results for the State of Michigan.

1.2 CNSI Capabilities

CNSI's approach to enhance Community Health Automated Medicaid Processing System (CHAMPS) to support the Consumer Engagement project effort is based on its ongoing partnership with MDCH and the Department of Technology Management & Budget (DTMB) and its extensive knowledge of CHAMPS design, implementation, and operation. As system developers and integrators, CNSI aligns its clients' business processes and information systems to provide access to the right information at the right time, enabling the achievement of their desired business results and creating enterprise value. CNSI will employ its extensive technological experience in the industry and incorporate its flexible tools and methodologies to deliver quality results on time and within budget. CNSI completes jobs for clients by delivering on commitments with speed and purpose in accordance with the client's specifications and expectations.

CNSI will build upon its extensive knowledge gained from designing, developing, implementing, and operating CHAMPS for the State with ongoing projects like CHAMPS Medicaid Compliance Project that provides a framework for comprehensive medical benefits and health care reform, and makes quality health care affordable and accessible for all Michigan citizens up to 133% of the federal poverty level (FPL), as well as previous CHAMPS efforts, including the HIPAA 5010 compliance implementation, and the ongoing International Classification of Diseases, Tenth Edition (ICD-10), transition and remediation. CNSI's experienced team of Medicaid subject matter experts (SMEs), who have the technical, business, and project management expertise to support this endeavor, will collaborate with the State's business and technical personnel to develop a flexible and innovative solution.

CNSI's experience working on prior Medicaid health information technology (IT) initiatives has led to incorporating the following factors in developing this SOW:

- **CNSI's ability to introduce technical innovation to the State's Medicaid operation**

  CNSI has introduced mobile technology and direct consumer engagement to the Medicaid program through the myHealthButton pilot project that introduced consumer engagement mobile phone applications to support better beneficiary health outcomes. CNSI has also introduced the innovative HealthBeat application that monitors CHAMPS activity and displays it graphically 24 hours a day, 7 days a week. Examples of HealthBeat metrics include claim and encounter auto-adjudication rates, and number of benefit inquiries processed per hour throughout the day. The collaboration between MDCH and CNSI continues to lead the nation in modernizing State Medicaid technology.

- **CNSI's capability to conduct complex analysis of Medicaid system requirements**

  CNSI's project teams have a wealth of experience with multiple Medicaid programs, which allow them to efficiently conduct the data-gathering and analysis activities for this initiative. Architects and SMEs who have worked with CHAMPS for a variety of Medicaid health IT initiatives are among the team members involved in this effort.

- **CNSI's sensitivity to the State of Michigan's needs and constraints**

  CNSI is uniquely qualified to remain sensitive to the State's needs and constraints in defining the project's approach. The team will employ an orderly, structured, professional approach that is sufficiently flexible to respond to changes in requirements that evolve from additional understanding. Overall, CNSI has "hands-on" experience of what does and does not work.

1.3 Proposed Project Organization

CNSI believes this SOW represents the best possible combination of architecture, technology, support, and experience to complete this project. The proposed team members are the best possible candidates of the respective disciplines. The underlying logic behind identifying each member of this group is that:

- They share the same philosophical approach for undertaking this project – **the customer comes first.**

- They understand the values that each member brings to successfully implementing the project.

- They are committed to understanding and incorporating the State's requirements.

- They understand the necessary advanced technologies, business needs, and operational issues.

CNSI's primary objective is the successful implementation and completion of the project. CNSI's team is fully dedicated to the Consumer Engagement project and is confident in its ability to achieve that goal.

However, an effective project management plan cannot work with CNSI's participation alone. As the customer, the State is the most important member of the project team. The customer must be actively engaged in the process at all levels. Implementation is only as good as partnership established and maintained between all involved parties.
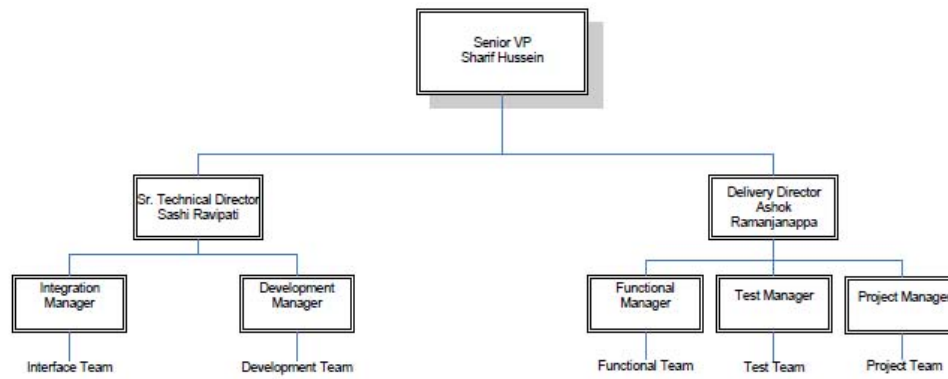
Figure 1: CNSI's Proven Customer-centric Project Organization

Section 2: Project Management, Methodology, Tools, and Technical Approach

This section presents CNSI's project management and technical approaches, methodology, tools, and phased work plan for accomplishing all activities required for the Consumer Engagement Project implementation. This section describes the scope of activities to be addressed throughout the project, from the initiation phase to final implementation, as well as the techniques and methodologies CNSI's project team will use.

Each of the following subsections will contain a high-level description of the 3-phase approach for this project. For each phase, the major activities and anticipated deliverables are presented, followed by a high-level description of the major milestones and approximate timelines.

2.1 Project Management Approach

The project's successful implementation relies on the framework and environment provided by project and quality management. Figure 2 shows CNSI's project and quality management framework and how the related activities interact with project tasks.

Figure 2: CNSI's Project Management and Quality Management Framework

Although all projects are unique, they share common components and processes. The generally accepted process groups defined by the *Project Management Body of Knowledge* (*PMBOK*), as incorporated into the CNSI project management process are:
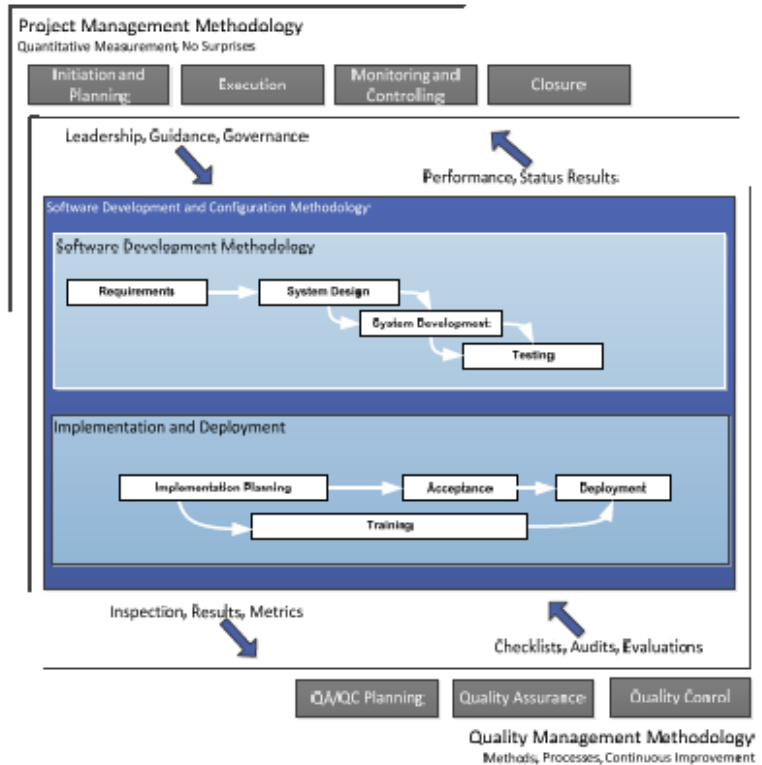
- **Initiating**: This process group defines the project objectives and grants authority to proceed. For CNSI, the initiating processes are largely incorporated into the proposal development process, during which required partners are identified.

- **Planning**: This process group refines the project objectives and scope, and plans the tasks, activities and steps required to meet the project's objectives. The planning processes start with the proposal development phase and proceed to follow the contract award, while CNSI works with the customer to establish and baseline the project management plan. The project management plan is modified and updated as required over the course of the project. It is the culmination of the planning processes for scope definition and management, time (scheduling), staffing (human resources), communications, and risk management.

- **Executing**: This process group puts the project's plans into motion. This is where the bulk of the work for the project is performed.

- **Monitoring and Controlling**: This process group measures the performance of the project's execution activities and reports these performance results to the project managers and stakeholders. Output is used to refine, improve, and/or change project management (including plans and schedules) as necessary to meet the project's objectives.

- **Closing**: This process group documents the formal acceptance and approval of the project's product and brings all aspects of the project to a close.

CNSI is confident it has the correct methodology and project framework in place to successfully implement the Consumer Engagement Project modifications. CNSI continually improves its project management processes using lessons learned from previous projects and through the proficiency and continuous education of its program and project managers, senior technical and engineering staff, and senior and corporate management. This ensures many advantages. Some of them are listed below.

- The project management philosophy is firmly entrenched within the entire project team, including MDCH and CNSI.

- Project management is a core competency.

- The project staff is focused on successfully implementing the project.

- Project management, quality management, and cost management processes are fully integrated and their infrastructure is in place.

- Effective project status reporting is established throughout the project life cycle.

- Project and software development methodologies are well documented.

- Project information is communicated continuously to the right people at the right time.

- The project is continuously monitored against performance.

- Excellence in quality and delivery is built in.

- Deliverable review and approval processes are in place.

By developing the project management plan, CNSI expects to collaborate with the MDCH project management team to further customize CNSI's project management system to successfully complete the project.

2.2 Project Methodology

CNSI's holistic approach for this project will use its proven methodology as the overarching framework and bring an experienced team of program managers, SMEs, technical experts, and change management resources to support this effort.

The project methodology is a framework that facilitates the integration of CNSI's extensive system experience, which is rooted in application implementations, methodologies, and delivery tools. This framework allows CNSI to deliver services to its clients consistently across its footprint and gather continued enhancements for its supporting methodology, thereby providing continued value for its clients.

CNSI's methodology is an integrated methodology that combines its best delivery assets. The methodology:

- Provides a scalable, integrated collection of assets.
- Provides a consistent level of detail and presentation.
- Supports tailoring to scale, which provides a unique, but consistent cost-effective delivery approach.

CNSI's methodology approach consists of the following:

- The **Manage** work approach provides a single, consistent approach to managing CNSI's engagements. Within the Manage Approach is the Quality Management activity, which verifies that deliverables and processes meet requirements. The Quality Management activity also supports continuous process improvement, as well as the methodology.
- The **Life Cycle** work approach addresses unique expertise while providing overall integration across the full implementation life cycle.

CNSI's methodology has the flexibility to be adapted to meet MDCH's unique requirements while confirming that its experienced staff members follow established practices.

While no two engagements are the same, MDCH expects CNSI to deliver in a consistent, systematic approach. The proposed project methodology incorporates CNSI's staff's delivery experience into a single, integrated approach. It provides the structure for integrating CNSI's capabilities while allowing individual project teams the flexibility to use client-mandated tools. The right assembly of technologies, techniques, and deliverable processes requires the specific experience and expertise found in CNSI's staff.

Investing time to create an effective plan with clear objectives is integral for effective project execution. CNSI's methodology provides a structured approach to the planning process. While this may require more initial effort than desired, experience has shown that following these processes reduces the likelihood of planning mistakes and results in lower risk and a more cost-effective, rapid delivery.

CNSI's methodology incorporates a consistent approach for identifying, tracking, and measuring the value derived from ongoing projects. CNSI's experience developing and delivering various client projects is incorporated into the project strategy and planning activities.

In undertaking this project, CNSI will employ its iVision360 system development life cycle (SDLC) methodology for the Consumer Engagement Project, which has been tailored with emphasis on the following principles:

- **User is at the Center:** CNSI's primary motivation in developing iVision360 is to put the user at the center of the project life cycle. Successful projects have high interaction with end users and place the user at the center of the project. Every phase and activity of iVision360 focuses on interaction and collaboration with the user community. CNSI does this by implementing agile techniques and building working software in an iterative fashion with user validation at periodic intervals.

- **Common Goals:** Users actively participate in configuration sessions with an integrated team of developers, analysts, and testers. This method avoids the pitfalls of waterfall methods. iVision360 provides the team with a sense of purpose, goal, and drive to accomplish the end objective: *software that meets the requirements*.

- **Early and Often Testing:** iVision360 provides an opportunity to test early and often so formal system test phases and subsequent test phases are more likely to meet schedule expectations with a lower error-discovery rate.

By introducing the baseline management features of waterfall, CNSI minimizes the risk of scope creep that is sometimes associated with iterative methods. Moreover, implementing project management processes will provide integrated change, issue, and risk management. Table 1 describes the key benefits of each of the industry-standard methodologies that are blended into iVision360.

Table 1. SDLC Methodology Comparison

Methodology	Key Benefits Blended into iVision360
Waterfall	Baseline approval of requirements Structured documents and customer approvals Formalized testing
Iterative/Agile	Frequent customer interaction Decomposing work into small meaningful features that are presented in working software Frequent course corrections Sense of real progress Early and frequent testing
Extreme Programming	Teams formed between developing organization and customer Sense of common vision and goal

iVision360 has been adapted for the purposes of this project. CNSI's iVision 360 methodology tailored specifically for the Consumer Engagement project is presented in *Section 2.5.1 iVision360 Iterative Design, Testing, and Documentation Approach.*

2.3 Project Management Tools

Tools, when properly applied within the methodology framework, will reduce the time to complete a project by providing predefined processes, templates, documents, and training materials. More importantly, use of the appropriate tools will help reduce risk and increase efficiency.

CNSI will continue to use the tools already proven effective during the previous undertakings to reduce the time to complete the project and mitigate risk. Table 2 lists the tools CNSI will utilize for the project.

Table 2. CNSI Project Tools

Tool	Purpose
Microsoft Visio	Develop use case diagrams, technical architecture diagrams, and support process flows
Microsoft Office	Develop project deliverables as well as presentations and spreadsheet artifacts needed to support deliverables
As-One	Repository for deliverables, presentations, and artifacts

Microsoft Visio and Microsoft Office are industry-standard tools. The following subsections provide additional information As-One.

2.3.1 As-One

Believing that continuous collaboration and information-sharing are key factors to successful project execution, CNSI will use As-One, its web-based enterprise program management solution. Figure 3 illustrates how As-One is designed to support team collaboration, knowledge management, and process improvement. As-One will provide a convenient repository for all program data and will give MDCH oversight personnel direct visibility into project performance.
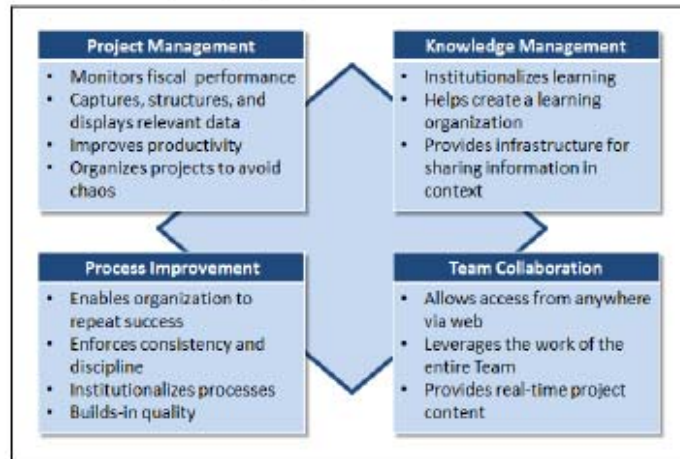
Figure 3: As-One Collaboration and Improvement

As-One is an out-of-the-box solution that supports CNSI's program management philosophy: *experienced people, managed processes, and enabling technology.*

As-One will allow CNSI users to share real-time data specific to the user's authority and association. As-One is accessed through a standard web browser. CNSI's previous and ongoing projects with the State of Michigan use As-One. Training will be provided the team members who are new to the program.

2.4 Solution

Over the last two years CNSI has been engaged with DCH in creating awareness and emphasizing the importance of Consumer Engagement in the new era of Heath Care. Over the past year, in coordination with DCH, CNSI has implemented myHealthButton, a pilot program to gauge the interest by the consumers in having their information at their fingertip utilizing the mobile medium. This program – myHealthButton --, the first of its kind mobile application for Medicaid members in the nation is a step closer towards the start of engaging the consumer and providing the transparency and support in administrating the proper healthcare.

To capitalize on the momentum created during the pilot program and advance the consumer engagement vision further, CNSI and the State of Michigan agreed to implement the comprehensive Consumer Engagement solution by introducing and implementing the Member Portal which will further the commitment to the Michigan Medicaid members and empower them to manage their own health. This is very important in achieving the three point aim of Better Health, Better Care and Lower Cost.

CNSI's Consumer Engagement Solution comprises of the following:

- Member Portal application, a multi-layered online web application, providing real-time health information to Michigan Medicaid members. Refer 2.4.1 for the technical overview and application architecture.

- Integration with the following CNSI's products:

  - **myHealthButton:** Standards-based, service-oriented integration of Member Portal with myHealthbutton mobile application to support mobile enablement of critical member services over mobile devices.

  - **eFRM:** Standards-based, service-oriented integration of Member Portal with eFRM to leverage fusion datasets comprising of members' administrative and clinical information.

Business, technical, and integration requirements will be elicited and documented as a part of the requirements phase of the project.

The following figure provides the conceptual view of CNSI's Consumer Engagement solution:
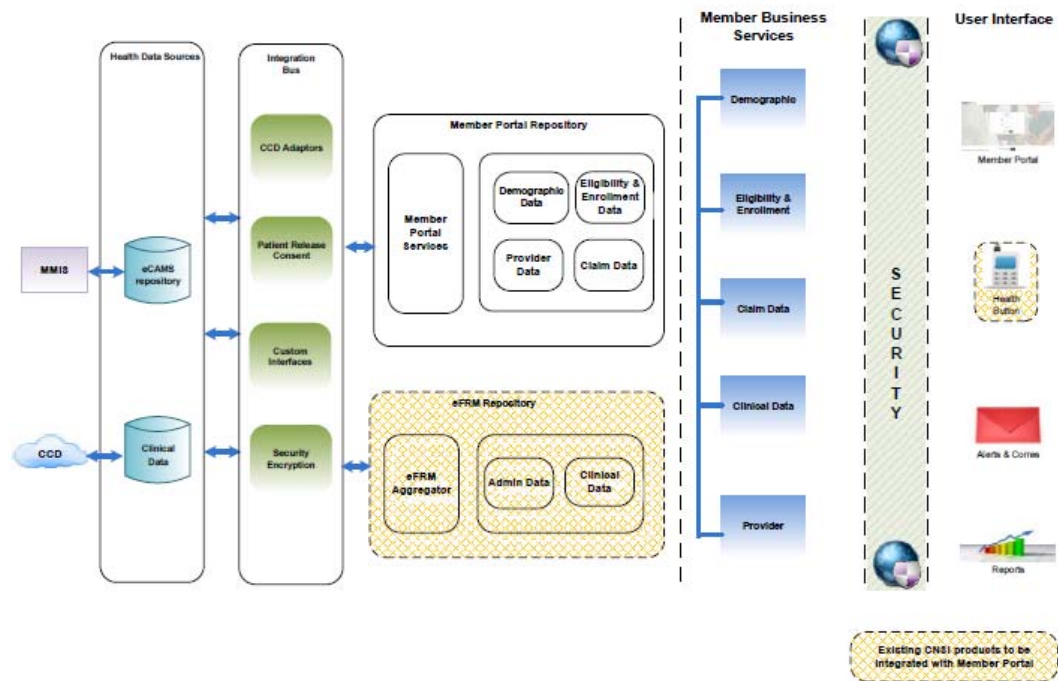
Consumer Engagement Solution

Figure 4: Consumer Engagement Conceptual View

2.4.1 Technical Overview

Member Portal is a member-centric online application, where Medicaid members will have secure access to their health information. Through this online portal application, members will be able to view information such as demographics, health care providers, benefits and eligibility, health insurance, claims and much more as listed in Section 2.4.2. The application will be built based on Industry standard usability principles in order to support a superior user experience to the members.

Technically, Member Portal web application will follow the Model-View-Controller (MVC) multi-layered architecture. There will be a well-defined separation of architecture layers and a component-based development that will make it easier to reconfigure and update business logic flow.

The table below summarizes the technologies used in the different architecture layers of the Member Portal application.

Authentication

Member authentication for accessing Member Portal and myHealthButton will use a common registration process and implemented based on a secure authentication, which can be reviewed and approved by the state at the requirements validation and design phase.

Integration

Member Portal integration with eFRM, myHealthButton and eCAMS will be based on standards-based, web services interface with support for secure transactions for information exchange. Web services security implementation will allow for secure information exchange between legitimate applications and/or users.

2.4.2 Functionality

The following section addresses the functional capabilities of the Member Portal application and its integration with myHealthbutton and eFRM.

Medicaid members will have the ability to view their health information through the Member Portal secured access, which will require members to go through a secure authentication process. The public access of the portal will allow access to functionalities such as Provider Search, Contact Us, FAQ and Online Help without anyone signing on to the application. The section 2.4.2.1 summarizes the public access functionalities and the section 2.4.2.2 summarizes the secured access functionalities of the Member Portal application.

Table 3: 2.4.2.1 Member Portal – Public Access Functionalities

Functional Group	Feature ID	Feature Description	Release ID*
Registration	MP-01	• Ability to register as a new user (member) by creating username and password.	R1

Log In	MP-02	• Ability to login to the application with valid credentials (username / password) created during registration and access the secured area with Medicaid Member's data. • Ability to link to privacy policy from the login page	R1
Provider Search	MP -03	• Ability to view and search for providers with multiple criteria • Ability to start an email and send details of the provider via email. • Ability to map driving directions and bus route to a provider from any location (location in the profile, current location or any other location) • Ability to compare and view provider ratings from third party sites.	R1
System Messages	MP -04	• Ability to display General system maintenance messages.	R2

Table 4: 2.4.2.2 Secured Access Portal Functionalities

Functional Group	Feature ID	Feature Description	Release ID*
Demographics	MP -05	• Ability to view and access personal information maintained within MMIS and view the information of all members associated with the profile	R1
Claims	MP -06	• Ability to provide members with on-line and real-time view of the pending and history claim data for services rendered by providers. • Ability to quickly search the member claims history information by date of service, claim number and provider name.	R1
Provider Search	MP -07	• Ability to search for Providers based on multiple criteria. • Ability to record any appointments with a provider and send email alerts and view the appointment calendar at any time. • Ability to maintain a list of favorite providers to quickly access the provider information from the dashboard.	R1
Insurances	MP -08	• Ability to provide members with on-line view of the current Insurance details on file.	R2

		• Ability to add, remove or change any other insurance coverage. • Ability to view and print health card image.	
Eligibility and Benefits	MP -09	• Ability to provide members with view only capability of current eligibility and benefit plan information.	R2
Prior Authorization	MP -10	• Ability to provide members with on-line and real-time view of the current and historical service authorizations data. • Ability to quickly search the member authorization history information by authorization request date, authorization number, service type, authorization tracking number and provider name.	R2
User Messages	MP-11	• Ability to provide user specific messages within the restricted, secure area of the Member Portal, such as the dashboard .It will be specific to the member or members of the account on view.	R2
Admin Console	MP-12	• Ability to setup general system maintenance messages and user maintenance messages for a period. • Ability to monitor active sessions and lock/unlock user accounts.	R2
Other Features	MP-13	In addition to the features available in the unsecured site, members will have additional features listed below: • Ability to complete an online survey through the portal. • Ability to complete health risk assessment survey to track current health behaviors and health measures. • Ability to view member communications such as letters/calls through the portal. • Ability to record free text notes/comments in every section for e.g. Provider, claims, and service authorization and eligibility. • Ability to sign up for mailing lists through the portal. • Ability to interactively chat between members and operational staff through a dashboard from anywhere within the restricted, secure area of the Member Portal site. • Ability to provide useful tools, such as help, and FAQ information related to the Medicaid program. Hover-over help for key required fields within the site.	R2

*Member portal releases:

Table 5: Member Portal Releases

Releases	Description	MI Release Reference	Release Schedule

R1	Member Portal – Release 1	R8-4.12	Please refer Figure 4 – Project Work Plan below.
R2	Member Portal – Release 2	R9-5.1	
R3	Member Portal – Release 3	R9-5.2	

2.4.2.3 Member Portal and myHealthButton Integration and Deployment

CNSI's myHealthButton mobile Medicaid application enables beneficiaries to securely access personal heath information and Medicaid benefits. This section addresses the integration and deployment of Member Portal with myHealthButton. Integration efforts will be split across two releases as described in the following table:

Table 6: 2.4.2.3 Member Portal and myHealthButton Integration and Deployment

Integration Requirement	Release ID	Description
Integration Requirements & Design	R1	• Analysis and design of integration between Member Portal and myHealthButton. • Design of member services (as web services) to facilitate information exchange between member portal and myHealthButton. • Integration specifications and design document for the identified interfaces.
Integration & Deployment	R2	• Development of required interfaces. • Integration and Deployment of the member services. • Implementation of business components to access centralized data.

2.4.2.4 Member Portal, eFRM Integration, and Deployment

CNSI's eFRM product provides fusion of members' health information comprising of administrative and clinical information (To be referred as the 'Fusion dataset'). This fusion data set can be made available for both members such as providing timely health alerts and actionable insights and also laying a foundation for advanced analytics for consumption by other stakeholders such as providers and State staff, in the long run.

This section addresses the integration and deployment of Member Portal and eFRM.

Table 7: 2.4.2.4 Member Portal and eFRM Integration and Deployment

Integration Requirement	Release ID	Description

Integration Requirements & Design	R3	• Analysis and design of integration between Member Portal and eFRM. • Design of member services (as web services) to facilitate information exchange between member portal and eFRM. • Integration specifications and design document for the identified interfaces.

Member-Specific Clinical Information	R3	• Ability to integrate Member Portal with eFRM data store and display member specific clinical information such as: Problems, allergies, medications, immunization records, encounters, plans, lab results and procedures.
		• Ability to provide a summarized view of the clinical and administrative data of a member.
		• Ability to display 4 key healthy measures of Michigan 4x4 health and wellness plan member health statistics such as
		   • Blood pressure
		   • BMI
		   • Cholesterol
		   • Blood sugar

Member Specific Fusion Information	R3	• Ability to integrate with eFRM fusion data which provides transformation and normalization of information utilizing health care industry standards HL7 and CCD and other data-exchange formats like XML. • Ability to provide a summarized view of Clinical and administrative data • Report measures which are relevant for member's consumption.
Integration & Deployment	R3	• Implementation of business components to integrate with Electronic Fusion Repository.

2.5 Technical and Phased Approach Work Plan

CNSI has created an initial work plan and timeline for the Consumer Engagement Project. This work plan describes the expected activities for the proposed phases, and major activities. This information is presented in **Error! Reference source not found.**6 below. A detailed description of the major activities within each phase is presented in *Section 2.5.2 Phased Approach Work Plan*.

CNSI has structured this work plan to address the overall relationships of the phases and activities required to complete the project. It effectively uses the professional resources required to accomplish these phases and produce high-quality products in a cost-conscious manner.

Based on this, the actual schedule is provided in the work plan given below. Work plan for each of the three releases planned for rolling out Consumer Engagement solution is provided in the following image:

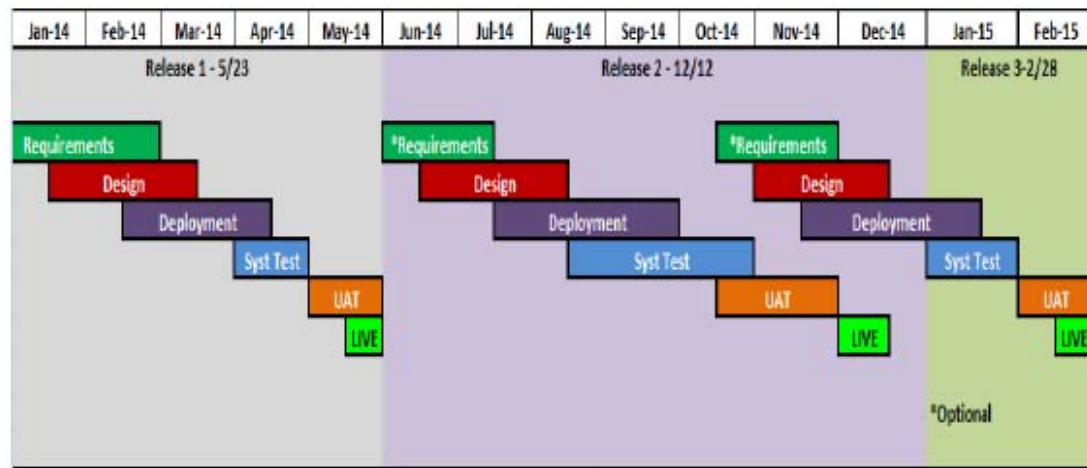| Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15

Figure 5: Project Work Plan

The following subsections further describe how CNSI intends to accomplish the goals of the work plan by employing its iVision360 methodology in the proposed approach for the Consumer Engagement Project.

2.5.1 iVision360 Iterative Design, Testing, and Documentation Approach

In this section, CNSI provides an outline of its iVision360 SDLC. The SDLC is a full-featured methodology that includes standard design and development processes. CNSI's SDLC processes have been adapted to address the specific needs of the project. This project will be divided into three phases and will be incorporated into a standard operational release for production deployment.

CNSI will engage in iterative requirements analysis and design with the State at the beginning of each release. The State will be able to review requirements analysis and design documents as soon as a logical set of iterations is completed. CNSI expects initial State signoff upon acceptance of the iteration's document scope. This will help reduce the time required for document review and approval. The documents reviewed at any time will have a smaller scope to help the State perform a thorough review. At the end of all iterations for a release, an overall document will be produced for a final delivery and acceptance to State.

The iterative/agile development and testing portion of the iVision360 methodology is visible in each release of design and coding. During this phase, technical design specifications for impacted functions and user stories are constructed in parallel by developers and SMEs. As the impacted function's design is completed, the team lead will plan the related development iterations.

Developers will build internal design documentation prior to, and during the iterations. The beginning of each iteration is reserved for startup activities, including finalizing the internal design documentation. The developer meets with the data modeling team on the first day of an iteration to conduct a walkthrough of any required data model changes. The data modeling team makes the required changes to the database schema and approves the physical model for coding. Developers also develop iteration test cases (for the

tasks that may not be tested with automatic internal iteration test code), which are required to test each story completely.

Coding begins when the internal design and pre-coding work is completed for the iteration. The developer will write internal iteration test scripts in parallel with actual working code and update screens and other system functions to fit the physical mode. The developer will execute the iteration test scripts as the developer completes sections of code. The codes will be built and tested incrementally. The developer will coordinate daily stand-up meetings and communicate any development issues.

This development approach ensures developers do not work in silos. It also avoids the traditional approach of throwing design documentation "over the fence" to developers to begin coding, only to discover later that major rework is required halfway through the development process.

Developers eventually test the code against internal auto-unit-code and manual internal iteration test scripts. As they reach the end of the iteration, they will run the code against functional scripts developed by the test team. Discrepancies are identified and corrected, and the developer retests to ensure all discrepancies are corrected and closed before the iteration ends. The developer will conduct a peer review of the impacted function's code on the last day of the iteration and then update the code based on the review. When the iteration testing and software code reviews by the developer are successfully completed for the iteration, the code will be promoted to the integration test stream. The code will be released to the test team for system testing when coding and developer unit testing is completed for all the impacted user stories.

During initial development iterations, the test team will develop system test cases based on requirements specification. During system testing, the test team will execute system test cases to validate system results against requirements.

CNSI plans to engage the test and development teams early on to build the regression test suite for critical functions. This will help to speed up testing and improve overall quality of implementation. During system testing, if required, regression tests will be performed on impacted functions based on changes to a previously tested baseline. The intent of regression testing is to demonstrate that the application continues to meet all approved requirements after changes have been introduced to a previously tested baseline.

For the Consumer Engagement Project, CNSI will integrate the new features through the standard operational release process. As soon as system testing is completed for an activity, CNSI will deliver the code to the (User Acceptance Test) UAT environment for the targeted release. A standard four-week UAT period will be used for this effort.

Figure 6 presents a graphical overview of the processes that are part of the iVision360 methodology.
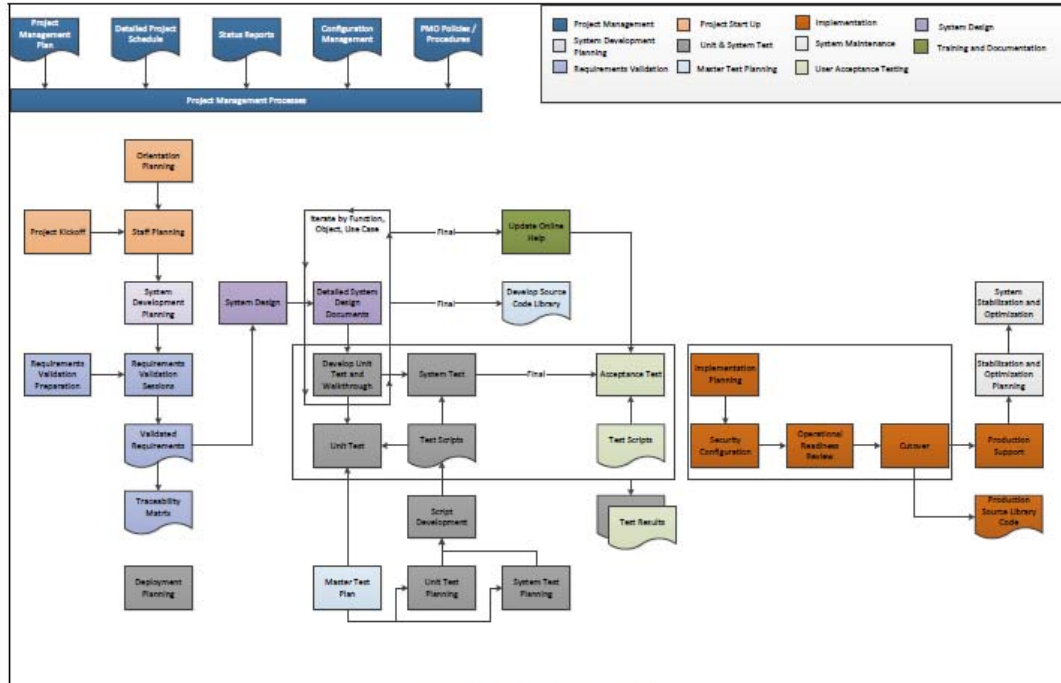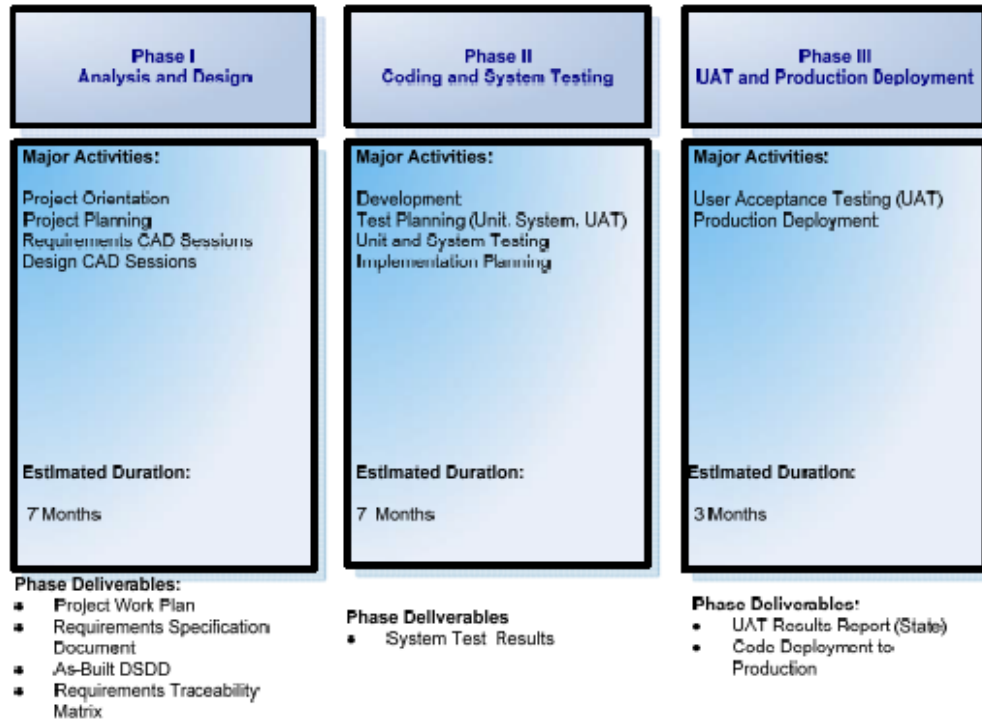
Figure 6: iVision360 Process Diagram

2.5.2 Phased Approach Work Plan

CNSI proposes an overlapping, three phase approach to the Consumer Engagement Project consisting of requirements elicitation and validation, design, development, and implementation. The three phases are:

- **Phase I:** Initiation and Requirements
- **Phase II:** Design, Coding and System Testing
- **Phase III:** UAT and Production Deployment

Figure 7 provides a high-level overview of the three phases, their major activities, and expected timelines.

Phase I Analysis and Design	Phase II Coding and System Testing	Phase III UAT and Production Deployment
Major Activities: Project Orientation Project Planning Requirements CAD Sessions Design CAD Sessions	**Major Activities:** Development Test Planning (Unit, System, UAT) Unit and System Testing Implementation Planning	**Major Activities:** User Acceptance Testing (UAT) Production Deployment
Estimated Duration: 7 Months	**Estimated Duration:** 7 Months	**Estimated Duration:** 3 Months
Phase Deliverables: • Project Work Plan • Requirements Specification Document • As-Built DSDD • Requirements Traceability Matrix	**Phase Deliverables** • System Test Results	**Phase Deliverables:** • UAT Results Report (State) • Code Deployment to Production

Figure 7: High-Level Project Phases and Activities

With every project, there are critical milestones to be met. Work products and deliverables must be developed and produced in order to provide the inputs necessary to perform the next phase. Table 8 elaborates on the key high-level milestones of the proposed implementation plan, along with the expected deliverables.

Table 8. High-Level Activities and Milestones by Phase

Major Activity	Description	Phase
Project Orientation	Establish the project team structure, key stakeholders, and operating guidelines for team activity throughout the course of the project.	Phase I
Project Planning	Establish project plans and schedules.	Phase I
Requirements CAD Sessions	Conduct CAD sessions to elicit and validate requirements for creating the application and technical architecture.	Phase I
Phase I Deliverables • Project Work Plan • Requirements Specification Document • As-Built DSDD • Requirements Traceability Matrix		
Design CAD Sessions	Conduct CAD sessions to document detailed system design changes for Member Portal architecture.	Phase I
Test Planning	Conduct detailed test planning for each phase of testing: Unit, System and UAT.	Phase II
Software Development	Software changes required to support the detailed functional design including: • Screens • Functionality (driven by use cases) • Data Models • Reports • Interfaces	Phase II
Unit and System Testing	Internal CNSI testing of developed functionality at the component, subsystem, and system level, including end-to-end (E2E) regression testing.	Phase II
Implementation Planning	Coordinate production installation of the system changes.	Phase II
Phase II Deliverables • System Test Results		